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10/085,528

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Mark W. Lambert

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EXAMINER

KIM, EUNHEE

ART UNIT

PAPER NUMBER

2123

NOTIFICATION DATE

DELIVERY MODE

03/19/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/085,528 | Applicant(s) LAMBERT ET AL. | |
| | Examiner Eunhee Kim | Art Unit 2123 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-13 and 15-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-13 and 15-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/06/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/06/2009 has been entered.
2. The amendment filed 01/06/2009 has been received and considered. Claims 1-9, 11-13, and 15-39 are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The prior art used for these rejections is as follows:

a. The Feb.3, 2001 version of the official corporate website of D-cubed, Ltd. of Cambridge, England, reads upon the claimed invention as stored in the "Internet Wayback Machine". (<http://web.archive.org/web/20010201070800/http://www.d-cubed.co.uk>) D-cubed, Ltd. is the developer of the 2D Dimensional Constraint Manager product. (Referred to as "the D-cubed reference").

b. D-Cubed, Ltd. The 2D DCM Manual, Version 4.2. January 2002. ("2D DCM Manual").

c. Wakelam et al. (US Patent No. US 6859768 B1).

4. Claim 1-9, 11-13, and 15-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over the D-cubed reference, in view of 2D DCM Manual, and further in view of Wakelam et al..

In regards to Claim 1, the D-cubed reference teaches the following limitations:

1. (Previously presented) A method comprising:
receiving an indication of modification to the CAD geometry piece;

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automatically modifying the CAD geometry piece and its boundary based at least upon the received indication; and

automatically modifying at least one of the pattern or the plurality of features to be continuously enclosed within the boundary of the modified CAD geometry piece, based at least upon the modified CAD geometry piece and the received input.

The section of the D-cubed reference titled "What is variational design?" on the page titled "The 2D and 3D Dimensional Constraint Managers: Overview" teaches the following (emphasis added):

In brief, variational techniques enable the end-user to specify and control their geometric models through the use of simple rules. Such rules frequently include dimensions and constraints. Dimensions, such as distances, angles and radii, have an easily understood interpretation. The meaning of constraints is less obvious. In fact they are simply rules that restrict, i.e. constrain, the behavior of the geometries in the model. Examples of constraints include parallelism, tangency and concentricity.

To modify a model, the end-user simply specifies a change to the rules, such as a modified value for a dimension. The DCM then automatically re-calculates the locations of all the geometries affected by the new dimension value, whilst ensuring that their final locations are consistent with the previously applied dimensions and constraints. The end-user does not have to re-position the geometries manually to create the new configuration; hence their productivity is greatly enhanced.

Examiner finds that the claimed "boundary" is one of the "constraints" taught in the section recited above, because the contents within the boundary must remain within the boundary when the boundary is changed. Since requiring the contents to remain within the boundary is a rule that restricts, *i.e. constrains*, the behavior of the geometries in the model, it is a constraint as defined by the D-cubed reference.

The D-cubed reference, while teaching the following limitation, does not teach it in great detail:

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automatically modifying the CAD geometry piece and its boundary based at least upon the received indication; and

2D DCM Manual, on the other hand, expressly teaches: (1) how a pattern constraint may be used in models containing groups of geometries repeated in a regular manner (see Section 4.2.11 "Pattern Constraints"), (2) the best way to add constraints onto groups of patterned geometries (Sections 12.4 "Patterns"), and (3) the use of pattern constraints to make regular polygons (12.5 "Regular Polygons"), (4) how a fixed geometry (a vertical line, which corresponds to claimed "boundary") and an unfixed geometry (a rectangle and a point) are solved when a modification of the geometry is received (see Section 2.5.6.2 "Weighted Standard Solving Mode", the associated Fig.4), and (5) maintaining the features on one side of a fixed line (see Section 2.4 "Chirality", especially pp.22-23; and sections 5.2 and 5.3).

The D-cubed reference and 2D DCM Manual are analogous art because they teach features of the same product.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the teachings of the D-cubed reference and 2D DCM Manual because they teach features of the same product.

The suggestion/motivation for combining the references would have been that they teach features of the same product.

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the D-cubed reference with 2D DCM Manual to obtain the invention as specified in Claim 1.

Neither the D-cubed reference nor the 2D DCM Manual, however, expressly teach the following limitations:

receiving a user-specified input defining a feature for a pattern and at least one inter-feature distance, the pattern defined from the feature and comprising a plurality of the feature, the inter-feature distance specifying a minimum or a maximum distance between the features of the pattern, the features of the plurality being evenly spaced relative to each other, the features of the plurality included within a boundary of a CAD geometry piece, and where feature corresponds to a feature of the CAD geometry piece;

automatically maintaining continuous enclosure of the pattern within the boundary of the modified CAD geometry piece, including

Wakelam et al., on the other hand, expressly teaches the limitation in Fig. 4a-5l where a user-specified input for building structure including beams, columns, and etc.

The D-cubed reference, 2D DCM Manual, and Wakelam et al. are analogous art because they are from the same field of endeavor of CAD software.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the teachings of D-cubed reference and 2D DCM Manual with those of Wakelam et al..

The suggestion/motivation for combining the references would have been that the speed and accuracy with which it delivers high quality information to members of the project team (Wakelam et al.' : Col. 5 lines 33-36).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify D-cubed reference and 2D DCM Manual with Wakelam et al. to obtain the invention as specified in Claim 1.

In regards to Claim 2, the D-cubed web site teaches the following limitations:

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2. The method of claim 1, wherein said receiving the input comprises receiving an input corresponding to an indication of a direction, the indication having an X-component and a Y-component.

(Examiner finds that X and Y coordinates are inherently stored in 2-Dimensional CAD drawings)

In regards to Claim 3, the D-cubed web site and the 2D DCM Manual teach the following limitations:

3. The method of claim 1, wherein: said receiving the input includes receiving a boundary value, the boundary value having at least one of a maximum value and a minimum value defining a maximum and a minimum, respectively, for a distance between at least one feature and the boundary; and

(Examiner finds that minimum and maximum values correspond to the taught "constraints". See also Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

automatically modifying at least one of the pattern or the plurality of features includes maintaining a distance between the at least one feature and the boundary within the boundary value.

(See also Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 4, the D-cubed web site and the 2D DCM Manual teach the following limitations:

4. The method of claim 1, wherein said receiving the indication of modification comprises receiving an indication of modification to a 2-D geometry piece parametrically defining the CAD geometry piece

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 5, the D-cubed web site and the 2D DCM Manual teach the following limitations:

5. The method of claim 4, wherein said receiving the modification to the geometry comprises receiving an indication of modification of a dimension of the 2-D geometry piece parametrically defining said CAD geometry piece.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 6, the D-cubed web site and the 2D DCM Manual teach the following limitations:

6. The method of claim 1, wherein said receiving the input comprises receiving an indication to optimize the pattern.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 7, the D-cubed web site and the 2D DCM Manual teach the following limitations:

7. The method of claim 1, wherein said automatically modifying the CAD geometry piece comprises parametrically updating the CAD geometry piece.

(See Section 2.5~6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 8, the D-cubed web site and the 2D DCM Manual teach the following limitations:

8. The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features comprises automatically determining what modification, if any, is necessary to one or more dimension of at least one of the plurality of features.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 9, the D-cubed web site and the 2D DCM Manual teach the following limitations:

9. (Currently amended) The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features comprises automatically determining what modification, if any, is necessary to an inter-feature distance between each of the plurality of features, and changing the inter-feature distance between at least one feature and an adjacent feature upon determining the modification is necessary.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 11, the D-cubed web site and the 2D DCM Manual teach the following limitations:

11. The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features comprises: automatically determining what modification, if any, is necessary to a first dimension in view of a determined modification to a second dimension, to maintain a relationship between said first and second dimensions, where the first dimension and the second dimension comprise first and second dimensions of each feature of the plurality of features, and

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

modifying at least one of the first dimension or the second dimension of each feature of the plurality of features. (See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

In regards to Claim 34, the D-cubed web site and the 2D DCM Manual teach the following limitations:

34. The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features includes removing one or more features from the pattern.

(See Sections 2.51 to 2.5.6.6 of the 2D DCM Manual.)

In regards to Claim 35, the D-cubed web site and the 2D DCM Manual teach the following limitations:

35. The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features includes adjusting a distance between at least one feature and the boundary such that the plurality of features are continuously included within the boundary.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

5. Claims in claim set 2 (claims 12-13, 15-22, and 36-37) and claim set 3 (claims 23-33 and 38-39) are rejected based on the same reasoning as the claims in claim set 1 (claims 1-9, 11, and 34-35). Claim set 2 consists of apparatus claims, and claim set 3 consists of article of manufacture claims that recite limitations equivalent to those recited in the method claims of claim set 1, and which are rejected over the D-cubed web site, in view of 2D DCM Manual, and further in view of Wakelam et al..

Response to Arguments

6. Applicant's arguments filed 01/06/2009 have been fully considered but they are not persuasive.

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection – Wakelam et al.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eunhee Kim whose telephone number is 571-272-2164. The examiner can normally be reached on 8:30am-5:00pm Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eunhee Kim/
Examiner, Art Unit 2123

/Paul L Rodriguez/

Supervisory Patent Examiner, Art Unit 2123